Amendments to the Claims

1. (original) An electromagnetic survey method for surveying an area that is thought or is known to contain a subterranean hydrocarbon reservoir, comprising:

transmitting a source electromagnetic signal from a source location;

detecting a detector signal at a detector location in response thereto;

obtaining survey data indicative of phase difference between first and second components of the detector signal resolved along first and second directions respectively; and

forming the phase difference between the first and second components.

2. (original) The survey method of claim 1, wherein the first and second components are radial and azimuthal with reference to the source location-receiver location geometry.

3. (original) The survey method of claim 1, wherein the first and second components are vertical and azimuthal with reference to the source location-receiver location geometry.

4. (original) The survey method of claim 1, wherein the first and second components are vertical and radial with reference to the source location-receiver location geometry.

5. (original) The survey method of claim 1, further comprising obtaining survey data indicative of phase of a third component of the detector signal resolved along a third direction orthogonal to the first and second directions.

6. (original) The survey method of claim 5, wherein the first and second and third components are vertical, radial and azimuthal with reference to the source location-receiver location geometry.

7. (previously presented) The survey method of claim 1, wherein the first and second directions are orthogonal.

8. (previously presented) The survey method of claim 1, wherein the source electromagnetic signal is broadcast from an antenna mounted on a submersible vehicle which is towed over the survey area to move the source location.

9. (previously presented) The survey method of claim 1, wherein the source location is fixed.

10. (previously presented) The survey method of claim 1, wherein the source electromagnetic signal is emitted at different frequencies to obtain survey data at a plurality of different frequencies.

11. (previously presented) The survey method of claim 1, wherein the source electromagnetic signal is emitted at a frequency of between 0.01 Hz and 10 Hz.

12. (original) A method of analysing results from an electromagnetic survey of an area that is thought or known to contain a subterranean hydrocarbon reservoir, comprising:

providing survey data indicative of phase difference between first and second components of a detector signal resolved along first and second directions respectively.

extracting the phase differences from the survey data; and

determining a metric from the phase differences that is predictive of the presence or absence of hydrocarbon.

13. (original) The analysis method of claim 12, wherein the first and second components are radial and azimuthal with reference to the source location-receiver location geometry.

14. (original) The analysis method of claim 12, wherein the first and second components are vertical and azimuthal with reference to the source location-receiver location geometry.

15. (original) The analysis method of claim 12, wherein the first and second components are vertical and radial with reference to the source location-receiver location geometry.

16. (original) The analysis method of claim 12, further comprising obtaining survey data indicative of phase of a third component of the detector signal resolved along a third direction orthogonal to the first and second directions.

17. (original) The analysis method of claim 16, wherein the first and second and third components are vertical, radial and azimuthal with reference to the source location-receiver location geometry.

18. (previously presented) The analysis method of claim 12, wherein the first and second directions are orthogonal.

19. (original) The analysis method of claim 18, wherein the phase differences are extracted by rotationally transforming the survey data from an instrument frame to a source frame.

20. (currently amended) A computer program product ~~bearing~~ comprising a machine readable medium bearing machine-executable instructions for implementing the method of claim 12.

21. (original) A method of planning an electromagnetic survey of an area that is thought or known to contain a subterranean hydrocarbon reservoir, comprising:

creating a model of the area to be surveyed including a seafloor, a rock formation containing a postulated hydrocarbon reservoir beneath the seafloor, and a body of water above the seafloor;

setting values for depth below the seafloor of the postulated hydrocarbon reservoir and resistivity structure of the rock formation;

performing a simulation of an electromagnetic survey in the model; and obtaining from the model phase differences between first and second components of a detector signal resolved along first and second directions respectively.

22. (original) The planning method of claim 21, wherein the first and second components are two of radial, vertical and azimuthal with reference to the source location-receiver location geometry.

23. (previously presented) The planning method of claim 21, further comprising:

repeating the simulation for a number of distances between a source and a detector and frequencies in order to select optimum surveying conditions in terms of source-to-detector distance for probing the hydrocarbon reservoir.

24. (currently amended) A computer program product ~~bearing~~ comprising a machine readable medium bearing machine-executable instructions for implementing the planning method of claim 21.

25. (new) A method for obtaining hydrocarbon from an area that contains a subterranean hydrocarbon reservoir, comprising:

performing an electromagnetic survey of the area to obtain survey data indicative of phase differences between first and second components of a detector signal resolved along first and second directions respectively;

determining a metric from the phase differences that is predictive of the presence or absence of hydrocarbon;

identifying the subterranean hydrocarbon reservoir using the metric;

penetrating the subterranean hydrocarbon reservoir with a hydrocarbon-producing well; and

extracting hydrocarbon from the subterranean hydrocarbon reservoir using the hydrocarbon-producing well.

26. (new) A volume of hydrocarbon obtained from an area that contains a subterranean hydrocarbon reservoir, the hydrocarbon obtained by:

performing an electromagnetic survey of the area to obtain survey data indicative of phase differences between first and second components of a detector signal resolved along first and second directions respectively;

determining a metric from the phase differences that is predictive of the presence or absence of hydrocarbon;

identifying the subterranean hydrocarbon reservoir using the metric;

penetrating the subterranean hydrocarbon reservoir with a hydrocarbon-producing well; and

extracting hydrocarbon from the subterranean hydrocarbon reservoir using the hydrocarbon-producing well.

27. (new) A results data set representing an area that is thought or is known to contain a subterranean hydrocarbon reservoir, the results data set obtained by:

transmitting a source electromagnetic signal from a source location;

detecting a detector signal at a detector location in response thereto;

obtaining survey data indicative of phase differences between first and second components of the detector signal resolved along first and second directions respectively;

forming the phase difference between the first and second components; and

generating the results data set based on the phase difference between the first and second components.

28. (new) A computer readable storage medium having a results data set according to claim 27 recorded thereon.

29. (new) A method for obtaining hydrocarbon from an area that contains a subterranean hydrocarbon reservoir, comprising:

extracting hydrocarbon from the subterranean hydrocarbon reservoir, the subterranean hydrocarbon reservoir having been determined to contain hydrocarbon by means of an electromagnetic survey method comprising the steps of:

performing an electromagnetic survey of the area to obtain survey data indicative of phase differences between first and second components of a detector signal resolved along first and second directions respectively;

determining a metric from the phase differences that is predictive of the presence or absence of hydrocarbon; and

identifying the subterranean hydrocarbon reservoir using the metric.

30. (new) A method according to claim 29, wherein the extracting step includes penetrating the subterranean hydrocarbon reservoir with a hydrocarbon-producing well.